IN THE CLAIMS

Please add claims 57-68 as follows:

Claims 1-34 cancelled

35. (original) A method of manufacturing a catheter, comprising:

providing a flexible sheath with an interior surface and an exterior surface;

applying a layer of a polymer matrix onto the interior surface;

swelling the polymer matrix in the presence of a fluid;

placing a rod within the interior of the flexible sheath;

forming the flexible sheath into a predetermined shape;

shrinking the polymer matrix by removing the fluid; and

removing the rod.

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36. (original) The method of claim 35 which further comprises coating the interior surface of the flexible sheath with a bonding agent.

37. (original) The method of claim 35 which further comprises releasably capturing a therapeutic agent by the polymer matrix before said applying a layer.

38. (original) The method of claim 37 wherein said capturing is by covalently bonding molecules of the therapeutic agent to molecules of the polymer matrix.

39. (original) The method of claim 35 wherein the polymer matrix is a hydrogel and the flexible sheath is adapted to form a portion of a catheter.

40. (original) The method of claim 39 wherein the rod has a surface adherence to the hydrogel that is less than the surface adherence of the hydrogel to the polymer matrix.

41. (original) The method of claim 39 wherein said shrinking is by dehydrating the hydrogel.

42. (original) The method of claim 35 which further comprises forming a lumen by said removing.

43. (original) The method of claim 35 wherein said inserting is before said applying.

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44. (original) A method of manufacturing an internally coated tube, comprising:

providing a rod, and a sheath with an interior surface and an exterior surface;

applying a layer of a polymer matrix onto the surface of the rod;

placing the rod within the interior of the sheath;

forming the sheath into a predetermined shape around the rod; and

removing the rod from the formed sheath..

45. (original) The method of claim 44 which further comprises coating the interior of the sheath to improve the adhesion of the polymer matrix to the interior.

Claims 46-53: cancelled

54. (original) A method for manufacturing a catheter, comprising:

providing a quantity of polymer matrix containing a releaseably captured compound, a sheath with an inner diameter, and a rod with an outer diameter, the inner diameter being larger than the outer diameter;

supporting the sheath in a linear shape;

supporting the rod within the sheath to form an annulus between the outer diameter of the rod and the inner diameter of the sheath;

placing the polymer matrix within the annulus; and

removing the rod.

55. (original) The method of claim 54 which further comprises shrinking the volume of the polymer matrix before said removing.

56. (original) The method of claim 54 which further comprises coating the inner surface of the sheath before said placing to improve the adhesion of the polymer matrix to the sheath inner surface.

57. (new)A method for providing a compound to a system comprising:

providing a compound releasably captured within a matrix material, the therapeutic agent being releasable upon receiving an energy input, a source of energy, and a controller operatively connected to the source and using a control signal to operate the source;

measuring a response of a system ;

deriving a fractal representation of the response;

preparing a control signal based on the fractal representation;

placing the matrix material and captured compound in fluid communication with the system; and

operating the controller with the control signal and providing energy to the matrix material sufficient to release a portion of the compound into the system.

58. (new) The method of claim 57 wherein the compound elicits a response of the system.

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59. (new) The method of claim 57 wherein the system is the circulatory system of a biological unit and the response is a response of the heart.

60. (new) The method of claim 57 wherein the system is the neurological system of a biological unit and the therapeutic agent is an anesthetic.

61. (new) The method of claim 57 wherein the system is the neurological system of a biological unit and the therapeutic agent is a neurotransmitter.

62. (new) The method of claim 57 wherein the matrix material is attached to a catheter and the catheter is inserted into the system.

63. (new) The method of claim 57 wherein the control signal has a frequency content generally less that about 1 hertz.

64 (new) The method of claim 57 wherein said operating includes releasing predetermined amounts of compound at variable intervals.

65. (new) The method of claim 57 wherein said operating includes releasing variable amounts of compound at predetermined intervals

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Cancel 67. (new) The method of claim 57 wherein said operating includes releasing variable amounts of compound at variable intervals.

68. (new) The method of claim 57 wherein said providing includes a sensor operatively connected to said controller, and a catheter, the matrix being attached to the catheter, and which further comprises sensing a second response of the system, wherein said operating is in response to said sensing.